



Original communication

Inmate-to-inmate violence as a marker of suicide attempt risk during imprisonment



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ABSTRACT

Objectives: To estimate the incidence of suicide attempts during imprisonment in a French prison and to determine factors associated with them.

Methods: All male inmates of a prison for prisoners awaiting trial or serving a short sentence (Bordeaux, France) were eligible for this cross-sectional study. They were face-to-face interviewed by an experienced psychologist ($n = 369$; mean age = 36 years). Socio-demographic data, imprisonment conditions, health status, healthcare utilization, mental health, impulsiveness, inmate-to-inmate violence (victim and perpetrator status) and suicidal behaviours were documented.

Results: The incidence of suicidal attempts during imprisonment was 13.4 per 100 person-years. Having made at least one suicide attempt during imprisonment was associated with: being a victim of physical or sexual violence without perpetrating it (adjusted OR = 5.4; 95%CI [2.4–12]), suffering from depressive and anxious symptoms (adjusted OR = 3.3; 95%CI [1.5–7.7]), having children (adjusted OR = 3.0; 95%CI [1.2–7.7]) and having a poor perceived health status (OR = 2.5; 95%CI [1.1–5.4]). A history of suicide attempt before imprisonment was not associated with the risk of suicide attempts while imprisoned.

Conclusion: Our results suggest that violence plays a major role in the suicidal process in prison. The inclusion of inmate-to-inmate violence in the screening checklists of inmate suicide risk should be explored.

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1. Introduction

It is a consistent finding worldwide that suicide rates in custody exceed those in the general population¹ and that self-injurious behaviours are common in prisons.² In 2008, the suicide rate in custody in France was 190 per 100,000, the highest in Europe³ (compared to 30 per 100,000 in the general population of males aged between 25 and 65: <http://www.cepidc.vesinet.inserm.fr/>).

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Socioeconomic status and other characteristics of prisoners before imprisonment have been mentioned to explain the elevated suicide rates in prison.¹ There is also strong evidence that most people who commit suicide have serious mental disorders, whether in custody or not,^{4,5} and several epidemiological surveys have found psychiatric disorders to be greatly over-represented in custodial settings,^{6,7} depression being the most frequent disorder. For instance, Falissard et al.⁶ estimated that about 20% of French prisoners were suffering from such a disorder over the previous 12 months. In addition, other factors directly associated with imprisonment are likely to be involved in the increased risk of suicide in prison.¹ For instance, in French prisons, it has been shown that inmates awaiting trial were at greater risk of suicide than those who had already been sentenced.³ By contrast, in the same study, the number of prisoners per cell was associated with a lower risk of

suicide. Much work remains to be done in this field, as the impact and conditions of detention on suicide risk in custody have received little attention. Better knowledge of the factors associated with suicide in this environment could improve existing tools for screening the risk of suicide in prison and make them more effective. Most of them are used at the beginning of imprisonment, the risk being the greatest during the first 72 h, and they have mainly been adapted from tools for screening conventional psychiatric outpatient populations,⁸ so they do not take into account factors specific to prison and those likely to vary over time. Data are needed to investigate the value of assessing potential variations in suicide vulnerability over the detention period.

The aims of the present study were to estimate the incidence of suicide attempts during imprisonment in a French prison and to determine factors associated with them.

2. Methods

2.1. Population

All male inmates of the prison in Gradignan, France, were eligible for this cross-sectional study. This type of prison is called a “*maison d'arrêt*” or remand prison, and is intended for remand prisoners and those serving short sentences. Since the inmate population has a quick turnover and because of on-going legal investigations, some prisoners could not be interviewed. We thus had to select a convenience sample. About 600 inmates are imprisoned at any one time and the occupation rate is about 185%. There were only 30 women so they were excluded from the present study (<http://www.senat.fr/questions/base/2011/qSEQ110518390.html>).

2.2. Data collection

From May to October 2009, inmates were face-to-face interviewed by a trained psychologist. Interviews were carried out in the parlours after fully informing the participants about the study and obtaining their written and verbal informed consent. Interviews lasted between one and two hours.

2.3. Collected data

2.3.1. Suicidal behaviours

Lifetime suicidal behaviours included suicidal ideation and suicide attempts. There were also specific questions about suicidal behaviours during imprisonment. For suicide attempts during and before imprisonment, there were questions about frequency. However, this information was not analysed because of its variability, so “at least one suicide attempt during imprisonment” was taken as the main outcome. Other questions also dealt with health service utilization after the suicide attempt (hospitalization, consultation and/or follow-up by a psychiatrist or a psychologist) and with the perceived reason for the attempt.

2.3.2. Inmate-to-inmate violence (victim or perpetrator) during the previous 12 months

The main covariate was inmate-to-inmate violence during imprisonment. The section of the questionnaire on violence during the previous 12 months was divided into four parts: the frequency and types of 1) sustained violence and 2) perpetrated violence; and a detailed description of the last 3) sustained and 4) perpetrated violence. For the present study, we analysed only the two first parts of this section. Violence was taken to include physical, sexual and psychological violence but only physical and sexual violence was analysed. For each type of violence, frequency was coded on a five-point scale, from never to at least once a day. It was dichotomized

never vs. at least once during the previous 12 months. Using this information, we created a four-level variable defined as follows:

- (1) none
- (2) victim only
- (3) victim and perpetrator
- (4) perpetrator only

2.3.3. Socio-demographic variables

Socio-demographic variables were age, matrimonial status, educational level, housing ownership and country of birth.

2.3.4. Imprisonment and imprisonment conditions

Data about the sentence and the reasons for imprisonment were collected. Data on living conditions in the prison and in the cell specifically were also collected and concerned: noise, smell, brightness, privacy, hygiene, friends in the prison, work and other activities. Activities included education, sport, reading, television, gardening, tinkering about, videogames and religious practice.

2.3.5. Impulsiveness

Impulsiveness was measured using the 11th version of the Barratt Impulsiveness Scale.⁹ This 30-item scale assesses trait-based self-report measures of impulsiveness according to three dimensions: attentional, motor, and non-planning impulsiveness. Scores were dichotomized respectively according to the following thresholds: 22, 29 and 31.⁹

2.3.6. Psychopathology

Hyperactivity and attention deficit, anxious and depressive symptoms and antisocial personality were assessed using the Adult Behaviour Checklist (ABCL).¹⁰ This questionnaire assesses diverse aspects of adaptive and maladaptive functioning. As is customary, scores were dichotomized using the 85th percentile.

2.4. Ethics

A complete description of the study was provided to each participant and written and verbal informed consent was obtained from each of them. Each participant was identified by a number in order to ensure anonymity.

2.5. Statistical analysis

First, the incidence rate of suicidal attempts during imprisonment was estimated. Since the date of the attempt was unknown, the denominator was calculated by using detention duration. Then, the probability of at least one suicide attempt during imprisonment was analysed using a logistic regression model.¹¹ Covariates were socio-demographic variables (gender, age, educational level, work situation), conditions of life in the prison and in the cell, psychological measurements (anxiety and depressive symptoms, hyperactivity, antisocial personality and impulsiveness), physical or sexual violence (none/perpetrator only/victim only/both) and a history of suicide attempts before imprisonment. These variables were selected using a stepwise descending analysis. Significant associations and confounding covariates were kept in the final model. Analyses were conducted using SAS 9.1 software (SAS Institute, Cary, NC, USA).

3. Results

In total, 369 inmates were face-to-face interviewed. Of these, 365 answered the questions about suicide attempts: 37 (10.1%) reported at least on suicide attempt during imprisonment and 72

(19.7%) a lifetime attempt before being incarcerated. Taking into account the duration of imprisonment, the incidence rate of at least one self-reported suicide attempt during imprisonment was 13.4 for 100 person-years. Among those who reported having attempted suicide in prison, the mean number of attempts was 2.4. As a result of the attempt, 18 (51.4%) were admitted to hospital, 25 (69.4%) were referred to a psychologist or the prison psychiatrist and 22 (61.1%) were followed up by a psychologist or a psychiatrist. The most frequent reasons reported for the suicide attempt were deprivation of freedom (35.1%) and being separated from family and relatives (29.7%).

Sample characteristics and proportion of suicide attempts during imprisonment for each subgroup are given in Tables 1–3.

Most inmates were 25 yr or older (mean age = 36 yr, range 18–75), in a relationship, had at least one child and had a qualification. Most of them were imprisoned for less than six months and were awaiting sentence. The main reasons for imprisonment were robbery, forgery, grievous bodily harm and murder. The frequency of suicide attempts during imprisonment was significantly higher among those who were 25 or older, those who had at least one child and those who were imprisoned for more than 6 months.

Most inmates had received visits at the parlours during the previous month. Most of them had not received any disciplinary sanctions during the present incarceration. Most of them reported problems of living conditions in the cell or in the prison, such as noise or lack of intimacy. More than half of the inmates were practising indoor sports but no outdoor sport. Most of them were not going to church or to school. Most of them were not receiving any vocational training. Their health status was perceived as good. Finally, most of them were not engaged in violent behaviour, either

Table 1
Frequency of suicide attempts according to sociodemographic characteristics of inmates in a French “*maison d’arrêt*” (Bordeaux, 2008, *N* = 369).

Variables	<i>n</i> ^a	Frequency of suicide attempts in prison <i>n</i> (%)	<i>p</i> -value
Age			0.04
18–25	90	4 (4.5%)	
25 and over	275	33 (12.0%)	
Matrimonial status			0.72
Single	129	15 (11.6%)	
In a relationship	191	17 (8.9%)	
Separated/divorced/widowed	46	5 (10.9%)	
Number of children			<0.01
None	152	8 (5.3%)	
At least one	214	29 (13.6%)	
Educational level			0.71
Qualification	237	23 (9.7%)	
No qualification	128	14 (10.9%)	
Awaiting sentence			0.24
Yes	182	15 (8.2%)	
No	184	22 (12.0%)	
Sentence duration			0.41
Awaiting sentence	148	13 (8.8%)	
Sentenced (sentence duration ≤ 24 months)	87	8 (9.2%)	
Sentenced (sentence duration > 24 months)	118	16 (13.6%)	
Time since imprisonment			0.04
≤ 6 months	195	14 (7.2%)	
> 6 months	169	23 (13.6%)	
Reason for imprisonment			0.13
Robbery and forgery	111	15 (13.5%)	
Rape	46	3 (6.5%)	
Grievous bodily harm and murder	113	15 (13.3%)	
Drugs	65	3 (4.6%)	
Other	31	1 (3.2%)	

^a The total is the same for each variable because of missing data.

Table 2

Frequency of suicide attempts according to conditions of life of inmates in a French “*maison d’arrêt*” (Bordeaux, 2008, *N* = 369).

Variables	<i>n</i> ^a	Frequency of suicide attempts in prison <i>n</i> (%)	<i>p</i> -value
Number of visits at the parlours (during the previous month)			0.59
None	103	11 (10.7%)	
[1–4]	146	12 (8.2%)	
> 4	117	14 (12.0%)	
Friends in the prison			0.04
None	138	20 (14.5%)	
At least one	228	17 (7.5%)	
Disciplinary sanctions since being imprisoned			0.04
Yes	80	13 (16.3%)	
No	286	24 (8.4%)	
Health status since being imprisoned			<0.01
Bad	118	22 (18.6%)	
Satisfying or better	248	15 (6.1%)	
Problems of living conditions (11 listed problems)			0.11
Less than half of the problems	134	9 (6.7%)	
More than half of the problems	232	28 (12.1%)	
Activities			0.38
Indoor sport			
No	163	19 (11.7%)	
Yes	203	18 (8.9%)	
Outdoor sport			0.06
No	213	27 (12.7%)	
Yes	153	10 (6.5%)	
Church			0.13
No	275	24 (8.7%)	
Yes	91	13 (14.3%)	
Education			0.90
No	288	29 (10.1%)	
Yes	76	8 (10.5%)	
Vocational training			0.90
No	346	36 (10.4%)	
Yes	15	1 (6.7%)	

^a The total is the same for each variable because of missing data.

as victim or perpetrator. However, a quarter of them were victims of physical or sexual violence.

The frequency of suicide attempts during incarceration was significantly higher among those who had no friends in the prison, those who had received disciplinary sanctions, those who perceived their health status as poor and those who were victims of physical or sexual violence without perpetrating such violence.

Overall, 55.5% of inmates reported suffering from sleep disorders. 59.9% reported drug or alcohol problems before imprisonment and 23.8% since then. Suicide attempts during imprisonment were significantly more frequent among those suffering from sleep disorders, those with the highest scores of anxious or depressive symptoms and among those with a personal history of suicide attempts before imprisonment.

Table 4 presents the results of the multivariate analysis of factors associated with at least one suicide attempt during imprisonment. Having made a suicide attempt during imprisonment was associated with: being a victim of physical or sexual violence without perpetrating it (adjusted OR = 5.4; 95%CI [2.4–12]), suffering from depressive and anxious symptoms (adjusted OR = 3.3; 95%CI [1.5–7.7]), having children (adjusted OR = 3.0; 95%CI [1.2–7.7]) and having a poor perceived health status since incarceration (OR = 2.5; 95%CI [1.1–5.4]). Other factors, in particular a personal history of suicide attempts, were not associated with the risk of suicide attempts during imprisonment after adjustment for the other factors.

Table 3

Frequency of suicide attempts according to psychological measurements and violence in a French “maison d’arrêt” (Bordeaux, 2008, N = 369).

Psychopathology and violence	n ^a	Prevalence (%)	Frequency of suicide attempts in prison n (%)	p-value
Physical and sexual violence				<0.01
None	258		13 (5.0%)	
Victim only	71		21 (29.6%)	
Victim and perpetrator	13		2 (15.4%)	
Perpetrator only	24		1 (4.2%)	
Sleep disorders				<0.01
No	163	55.5	9 (5.5%)	
Yes	203		28 (13.8%)	
Impulsiveness				0.40
<85th percentile	292	na	28 (9.6%)	
≥85th percentile	52		7 (13.5%)	
Hyperactivity with attention deficit				0.50
<85th percentile	292	na	29 (9.9%)	
≥85th percentile	54		7 (13.0%)	
Antisocial personality				0.18
<85th percentile	295	na	28 (9.5%)	
≥85th percentile	51		8 (15.7%)	
Anxiety and depressive symptoms				<0.01
<85th percentile	291	na	18 (6.2%)	
≥85th percentile	55		18 (32.7%)	
Addictive behaviour (drug or alcohol) before imprisonment				0.84
No	146	59.9	15 (10.3%)	
Yes	218		21 (9.6%)	
Addictive behaviour (drug or alcohol) during imprisonment				0.12
No	279	23.8	32 (11.5%)	
Yes	87		5 (5.8%)	
History of suicidal attempt(s) before imprisonment				0.03
None	294	19.5	24 (8.2%)	
One	71		12 (16.9%)	

^a The total is the same for each variable because of missing data.

4. Discussion

The aims of the present study were to estimate the incidence of suicide attempts in a French prison and to determine factors associated with it. As expected, the risk of suicide attempts during imprisonment was very high (13.4 per 100 person-years). Being a victim of physical or sexual violence without perpetrating it was strongly associated with the risk of suicide attempts. Other factors included depressive and anxious symptoms, having children and having a poor perceived health status. A history of suicide attempts before imprisonment was no longer associated with the risk of suicide attempts while incarcerated after adjustment for other risk factors.

The strongest predictor of suicide attempts during imprisonment was being the victim of physical or sexual violence. To our knowledge, this is the first time such a link has been established in prison whereas it has already been studied in other contexts. For example, violence sustained by adolescents and women is known to be associated with an increased risk of suicidality, attempts or ideation.^{12–16} Furthermore, many studies have shown that child abuse and violence during childhood are associated risk factors for suicide^{17,18}. The pain and humiliation of those who experience violence may play a major role in predisposing individuals to suicidal ideation and behaviour.

Attempting suicide in prison was also strongly linked to anxiety and depressive symptoms, which has already been described in correctional settings.^{1,4} In the general population, it has also been

Table 4

Factors associated with suicide attempts during imprisonment in a French “maison d’arrêt” (Bordeaux, 2008, n = 369).

Variables	Model 1 (complete) Adjusted OR (95% IC)	Model 2 Adjusted OR (95% IC)
Violence		
None or perpetrated violence only	Ref	Ref
Victim of physical or sexual violence (without perpetrating it)	4.9 (1.9; 12.6)	5.4 (2.4; 12.2)
Age		
18–25	0.9 (0.2; 3.6)	
25 and over	Ref	
Children		
No	Ref	Ref
Yes	3.4 (1.1; 10.2)	3.0 (1.2; 7.7)
Awaiting for sentence		
Yes	1.2 (0.4; 2.9)	
No	Ref	
Time since imprisonment		
<6 months	Ref	
>6 months	1.1 (0.4; 2.7)	
Problems of living conditions (11 listed problems)		
Less than half of the problems	Ref	
More than half of the problems	1.6 (0.6; 4.3)	
Outdoor sport		
No	Ref	
Yes	1.2 (0.4; 3.4)	
Church		
No	Ref	
Yes	1.3 (0.5; 3.4)	
Reason for imprisonment		
Rape	Ref	
Robbery and forgery	2.0 (0.4; 9.1)	
Grievous bodily harm and murder	2.6 (0.6; 11.8)	
Drugs	0.5 (0.1; 4.4)	
Other	0.9 (0.1; 12.8)	
Sleep disorders		
No	Ref	
Yes	2.0 (0.7; 5.3)	
Anxious and depressive symptoms (Achenbach score)		
<85th percentile	Ref	Ref
>85th percentile	2.7 (0.9; 7.3)	3.3 (1.5; 7.7)
Hyperactivity (Achenbach score)		
<85th percentile	Ref	
>85th percentile	0.7 (0.2; 2.7)	
Antisocial personality		
<85th percentile	Ref	
>85th percentile	2.1 (0.6; 7.3)	
Addictive behaviours during imprisonment		
No	Ref	
Yes	0.5 (0.2; 1.8)	
History of suicidal attempts before imprisonment		
No	Ref	
Yes	1.3 (0.6; 4.1)	
Perceived health status		
Poor	2.3 (0.8; 5.8)	2.5 (1.1; 5.5)
Satisfactory or better	Ref	Ref
Friends in prison		
None	Ref	
At least one	0.5 (0.2; 1.4)	
Disciplinary sanctions since imprisonment		
Yes	1.7 (0.6; 4.5)	
No	Ref	

reported that about 90% of suicide victims had a psychiatric disorder at the time of the suicide, mostly a depressive disorder.⁵

We did not find any significant association between suicide attempts in prison and a personal history of suicide attempts, contrary to several studies conducted in the general population^{5,19–21} and in custody.¹ This lack of association may reflect the particular context of imprisonment where the classical risk factors may not contribute in the same way to the risk of suicide attempts.

Similarly, while previous studies have shown an increased risk of suicide among those charged with sexual offences,¹ we found no such results, possibly because this kind of offence was under-reported by the participants. In our analysis, impulsiveness was not associated with the risk of suicide attempts either, which might reflect the inconsistency of this result in the literature.²²

4.1. Limitations

The major limitation of our study is its cross-sectional design, which prevented us from drawing causal inferences. Thus, some of the associations might be due to reverse causality. For instance, those with suicidal vulnerability might be weaker than the others and thus more likely to be the victim of violence. However, even if not causal, sustained violence remains an easily identifiable marker of suicidal risk that could be easily included in screening strategies.

Another limitation is that the participants in this study were not strictly representative of the French prison population. Indeed, the French prison system includes two other types of prisons for prisoners serving longer sentences, the “maisons centrales” (central prisons) and the “centres de détention” (detention centres) that were not investigated. In these two types of prison, inmates are not awaiting sentence, a situation that we found to be a risk factor for suicide. An additional bias may apply to the study because only one prison located in the Southwest of France was selected, so our findings cannot be generalised to all the “maisons d’arrêts” in France. However, the large size of Gradiignan prison and the wide recruitment within Aquitaine, a representative region of France, diminish the probability of a systematic selection bias.

All data were self-reported, so there might have been a bias such as a desirability bias with the risk of underreporting sensitive information like sexual assault or drug consumption. However, the accuracy of the information was improved by using data recorded by the prison administration, when available. Both types of data appeared to be concordant.

Finally, some factors were not taken into account. First of all, some psychiatric disorders were not measured such as psychotic disorders, which have been shown to be strongly associated with suicide attempts in prison.⁴ Furthermore, information on abuse and sustained violence during childhood were not collected and analysed. Child abuse is known to be associated with both adulthood violence²³ and suicidal behaviours^{24,25} and it could have confounded the relationship between violence in prison and suicide attempts.

5. Conclusion

The main factor associated with suicide attempts during imprisonment was sustained physical or sexual violence. Owing to associated injuries and healthcare utilization, this factor is an easily identifiable marker of suicidal risk that could be included in screening strategies. This could be included over time in checklists screening the risk of suicide in prison in order to improve access to mental health care for distressed prisoners.

Ethical approval

None.

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Contributorship

G. Encrenaz: This study was conducted while G. Encrenaz was a post-doctoral fellow at the Equipe prévention et prise en charge des traumatismes, Centre de recherche INSERM U897 University Bordeaux Segalen and written while she was at COMPTRASEC CNRS UMR 5114, University Bordeaux 4. She conceived the study, did the literature search, interpreted the data and drafted the manuscript.

A. Miras: conception and design of the study, literature search, and critical revision for important intellectual content.

B. Contrand: design and analysis of survey, and critical revision for important intellectual content.

S. Pujos: Data collection, interpretation of data, and critical revision for important intellectual content.

C. Galéra: interpretation of data, and critical revision for important intellectual content.

G. Michel: interpretation of data, and critical revision for important intellectual content.

E. Lagarde: conception and supervision of study, and critical revision for important intellectual content.

Conflict of interest

None.

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